CLAIMS

1. A device for handling a sample, in particular, for treating, examining or inserting or extracting a cryosample, the sample being surrounded during the handling by an ambient gas, **characterized by** a climate control equipment (9-11, 10'', 11'', 33, 33', 38, 44) that cools, dries and/or at least partially replaces the ambient gas with a protective gas in order to avoid a deterioration of the sample by the ambient gas during handling.

2. The device according to Claim 1, **characterized by** a protective container (1, 1'', 18, 18', 35, 42) for receiving the sample during the handling, the climate control equipment (9-11, 10'', 11'', 33', 38, 44) being connected to the protective container (1, 1'', 18, 18', 35, 42) in order to dry and cool the ambient gas present in the protective container (1, 1'', 18, 18', 35, 42) and/or replace it with the protective gas.

3. The device according to Claim 1 or 2, **characterized in that** the climate control equipment (9-11, 10'', 11'', 33, 33', 38, 44) has a protective gas source (9, 10, 10'', 19, 19', 37) in order to fill the protective container (1, 1'', 18, 18', 35, 42) at least partially with a protective gas, the protective gas preventing a deterioration of the sample during its handling.

4. The device according to Claim 3, **characterized in that** the protective gas source (9, 10, 10'', 19, 19') has an at least partially open protective-gas storage container (9, 18, 18') in which liquefied protective gas is present that outgases into the protective container (1, 1'', 23, 23').

5. The device according to Claim 4, **characterized in that** a heating element (11, 11', 33, 33') is provided for heating the liquefied protective gas present in the protective-gas storage container (9, 18, 18') and for furthering the outgassing of the protective gas.

6. The device according to Claim 4 or 5, **characterized in that** the protective-gas storage container (9, 18, 18') has a filter element in order to retain bacteria, viruses or other particles present in the liquefied protective gas during outgassing.

7. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 23, 23', 35) is mobile and comprises an opening on its bottom in

order to introduce the sample into or remove it from the protective container (1, 23, 23', 35) or to place the protective container (1, 23, 23', 35) on the sample.

8. The device according to Claim 7, **characterized by** a seal (4, 25, 25') for sealing the opening of the protective container (1, 23, 23', 35) after the protective container (1, 23, 23', 35) has been placed on the sample.

9. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 1'' 23, 23', 35, 42) has an at least partially transparent container wall in order to make a visual monitoring possible during the handling of the sample.

10. The device according to any one of the preceding Claims, **characterized in that** an outlet opening (48) is arranged on the top of the protective container (1, 1'', 42) for discharging the excess ambient gas.

11. The device according to Claim 10, **characterized in that** a discharge tube (12, 12'') is connected to the outlet opening on the outside of the protective container (1, 1''), which tube has a downwardly directed mouth located outside of the protective container (1, 1'').

12. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 1'', 23', 42) has at least one gas-tight or gas-exchange-reduced intervention zone (6, 6'', 34') in order to be able to treat the sample in the protective container (1, 1'', 23', 42).

13. The device according to any one of the preceding Claims, **characterized in that** a gas-tight or gas-exchange reduced lock (7, 7'') is provided in order to be able to introduce the sample into the protective container (1, 1") and to remove it from of the protective container (1, 1'').

14. The device according to Claim 13, **characterized in that** the lock consists of an opening in the protective container (1'') and of a flexible curtain (14'', 15'') covering the opening.

15. The device according to Claim 13 or 14, **characterized in that** a lock (14'', 15'') is arranged on each of the opposite sides of the protective container (1'') in order to make an automated operation possible.

16. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 1'', 23, 23', 35, 42) has a thermally insolating container wall in order to prevent condensations caused by cold on its outside.

17. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 1'', 23, 23', 35, 42) has a heatable container wall in order to prevent condensations caused by cold on its outside.

18. The device according to any one of the preceding Claims, **characterized in that** at least one UV lamp for sterilization is mounted in the protective container (1, 1'', 23, 23', 35, 42).

19. The device according to any one of the preceding Claims, **characterized in that** the protective container (1, 23, 23', 35) is substantially bell-shaped or hood-shaped and portable.

20. The device according to any one of the preceding Claims, **characterized in that** the protective container (23) is man-accessible.

21. The device according to Claim 20, **characterized by** a breathing air supply (30, 31, 32) for an operator (28) in the protective container (23).

22. The device according to any one of the preceding Claims, **characterized in that** the protective gas is substantially sterile.

23. A method for handling a sample, in particular, for treating, examining or inserting or extracting a cryosample, the sample being surrounded during the handling by an ambient gas, **characterized in that** the ambient gas is cooled, dried and/or at least partially replaced with a protective gas in order to avoid a deterioration of the sample by the ambient gas during the handling of the sample.

24. The method according to Claim 23, **characterized in that** the sample is introduced into a protective container (1, 1'', 23, 23', 35, 42), the ambient gas in the protective container (1, 1'', 23, 23', 35, 42) being cooled, dried and/or at least partially replaced in order to avoid a deterioration of the sample by the ambient gas.

25. The method according to Claim 24, **characterized in that** the sample is first arranged in a sample container (20, 20', 22, 22') and is not removed from the sample container (20, 20', 22, 22') until in the protective container (23, 23').

26. The method according to Claim 25, **characterized in that** the protective container (1, 1'', 23, 23', 35, 42) is filled at least partially with the protective gas prior to the removal of the sample from the sample container (20, 20', 22, 22').

27. The method according to any one of Claims 23 to 26, **characterized in that** liquefied protective gas is heated in order to further the outgassing of the protective gas.

28. The method according to any one of Claims 23 to 27, **characterized in that** the protective gas is filtered prior to the filling of the protective container (1, 1'', 23, 23', 35, 42) in order to retain bacteria, viruses or other particles.

29. The method according to any one of Claims 23 to 28, **characterized in that** the protective container (1, 1'', 23, 23', 35, 42) has an opening on its bottom and is placed on the sample container with the sample in it before the sample is removed from the sample container (20, 20', 22, 22').

30. The method according to any one of Claims 23 to 29, **characterized in that** the container wall of the protective container (1, 1'', 23, 23', 35, 42) is heated in order to prevent a condensation on the container wall.

31. The method according to any one of Claims 23 to 30, **characterized in that** the sample in the protective container (1, 1'', 23, 23', 35, 42) is irradiated with UV light for sterilization.

32. The method according to any one of Claims 23 to 31, **characterized in that** the protective gas is substantially sterile.